

WHAT IS CLAIMED IS:

1. An electrical connector, comprising:

a housing including an inner bore and an open end providing access to said inner bore, said inner bore having an inner surface and a bore retaining groove disposed in said inner surface;

a piston-contact element slidably received in said inner bore of said housing through said open end, said piston-contact element being axially movable between retracted and advanced positions and having an outer surface with an element retaining groove disposed in said outer surface; and

a resilient member received in each of said retaining grooves releasably retaining said piston-contact element in one of said retracted and advanced positions within said inner bore of said housing.

2. An electrical connector according to claim 1, wherein

said piston-contact element is in said retracted position when said resilient member is received in said first and second retaining grooves; and

said piston-contact element is in said advanced position when said resilient member is received in said bore retaining groove and spaced from said element retaining groove.

3. An electrical connector according to claim 1, wherein

said piston-contact element includes opposing first and second ends;

said first end is adapted to engage another electrical connector; and

said second end includes a stop substantially preventing removal of contact member from said inner bore of said housing.

4. An electrical connector according to claim 3, wherein

said stop comprises an annular shoulder abutting said resilient member in the other of said retracted and advanced positions.

5. An electrical connector according to claim 3, wherein said first end of said piston-contact element includes probe fingers; and said second end is a piston.
6. An electrical connector according to claim 5, wherein said probe fingers and said piston-contact element together form a unitary, one-piece member.
7. An electrical connector according to claim 1, wherein said retaining grooves are each substantially annular and continuous.
8. An electrical connector according to claim 1, wherein said bore retaining groove includes first and second side walls and an end wall extending therebetween; and
an angled wall extends from said second side wall facilitating engagement of said resilient member in said first groove.
9. An electrical connector according to claim 1, wherein said element retaining groove includes first and second side walls and an end wall extending therebetween, said second side wall being angled with respect to said first side wall facilitating disengagement of said resilient member from said second groove.
10. An electrical connector according to claim 1, wherein said resilient member is a substantially ring shaped spring.
11. An electrical connector according to claim 10, wherein said resilient member includes a slot allowing expansion and compression of said resilient member.

12. An electrical connector according to claim 1, wherein an electrical contact of another electrical connector is received in said inner bore of said housing through said open end engaging said piston-contact element.

13. An electrical connector according to claim 1, wherein said housing includes an inner conductive sleeve; and said bore retaining groove is disposed in said conductive sleeve.

14. An electrical connector according to claim 1, wherein said electrical connector is a high-voltage bushing insert.

15. A method of operating first and second electrical connectors under a load when an arc is created during a fault, comprising the steps of:

inserting a second contact element of the second connector in an inner bore of a housing of the first electrical connector toward a first piston-contact element thereof;

generating gas from the arc developed between the separated contact elements;

directing the gas to apply a force to move the first piston-contact element in a direction toward the second contact element;

expanding a resilient member located in both a bore retaining groove in the inner bore and a element retaining groove located in the piston-contact element, thereby spacing the resilient member from the element retaining groove and permitting movement of the piston-contact element from a retracted position within the inner bore by the application of the force of gas; and

moving the piston-contact element to an advanced position for engaging the second contact element to provide an electrical connection between the first and second contacts to quench the arc.

16. A method according to claim 15, wherein
a tapered protrusion on the piston-contact element expands the resilient member until the resilient member is spaced from the element retaining groove.
17. A method according to claim 15, wherein
the piston-contact element moves toward the second contact element until the resilient member engages a stop member on the piston-contact element.
18. A method according to claim 15, wherein
said resilient member is a substantially ring-shaped spring.
19. An electrical connector according to claim 1, wherein
said first electrical connector is a high-voltage bushing insert.
20. A method according to claim 15, wherein
said second electrical connector is an elbow cable connector.